



From "Mobile" to "Ultra Mobile"

-CMO's Perspective of UMPC New Revolution

Date: Jun. 6th

Ultra
Mobility

Agenda

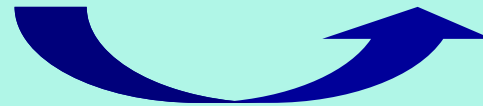
- CMO Corporate Overview
- Overall Market Trend of UMPC
- CMO Product Plan & Technology for UMPC
- Conclusion

Total Display Solution Provider - CMO

Industrial, Amusement, Avionics, Vehicle
, Small & Medium



Full Size from 1.2" to 56"



Notebook



Monitor



Medical Display

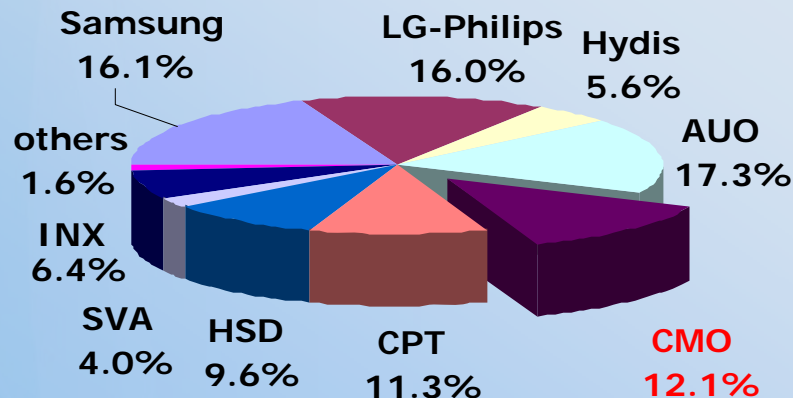


TV Application

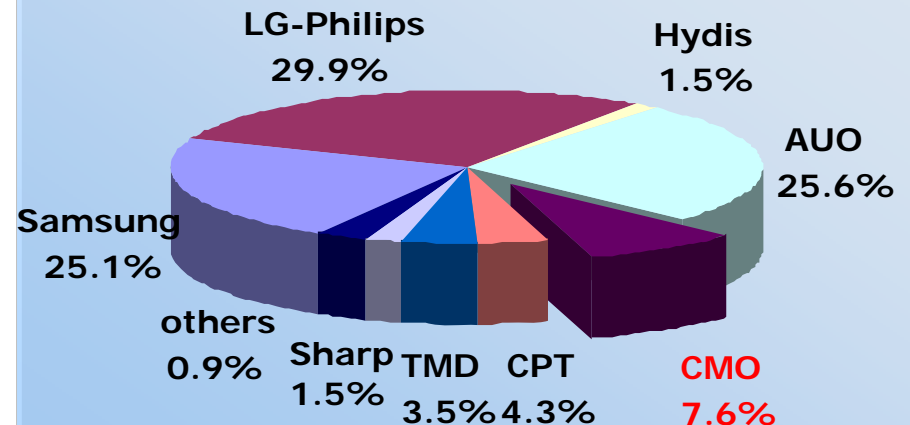


Q1'07 Market Share - IT Division

Monitor Shipment



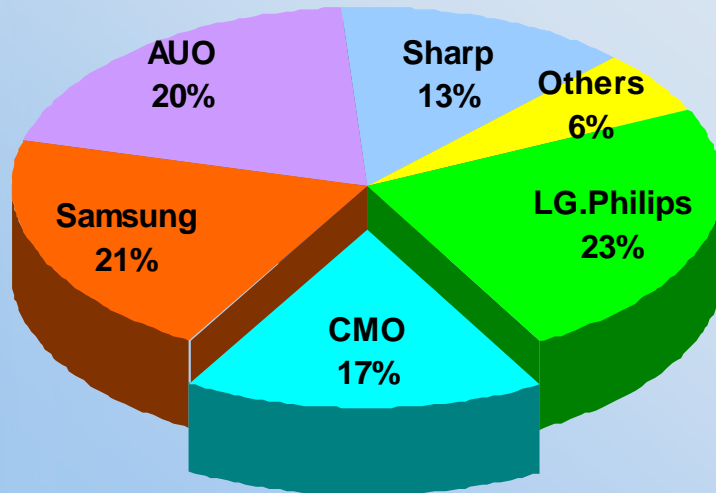
Notebook Shipment



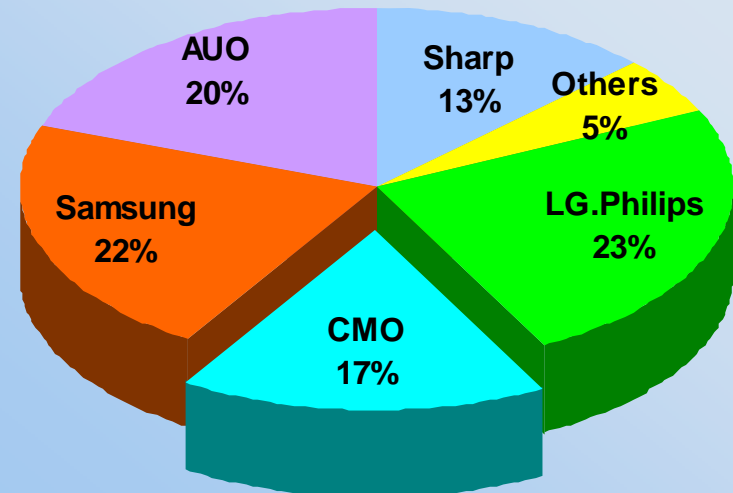
Source: CMO Marketing & Display Search

Q1'07 Market Share - LCD TV

worldwide No.4 (All size)



Worldwide No.4 ($\geq 20''$)



Source: CMO Marketing & Display Search

CMO Fab Capacity Update

	Substrate size (mm ²)	December 2006	December 2007	Main Products
G 3.5 Fab	620 x 750	55	55	Small/Medium
G 4 Fab	680 x 880	88	88	NB, MTR
G 5 - 1 Fab	1,100 x 1,300	145	145	NB, MTR
G 5.5 Fab	1,300 x 1,500	160	180	50"+, 37", 32", 27", 22"W, 19"
G 5 - 2 Fab	1,100 x 1,300	75	180	47", 42", 26", NB, MTR
G 7.5 Fab	1,950 x 2,250	-	50	47", 42"
G 6 Fab	1,500 x 1,850	<ul style="list-style-type: none"> ■ Design capacity of 90K per month ■ Mass production in 4Q 2007 		37", 32"
G 8 Fab	TBD	■ Land development commenced		50"+



Fab 1



Fab 2



Fab 3



Fab 4



Fab 5



Fab 6

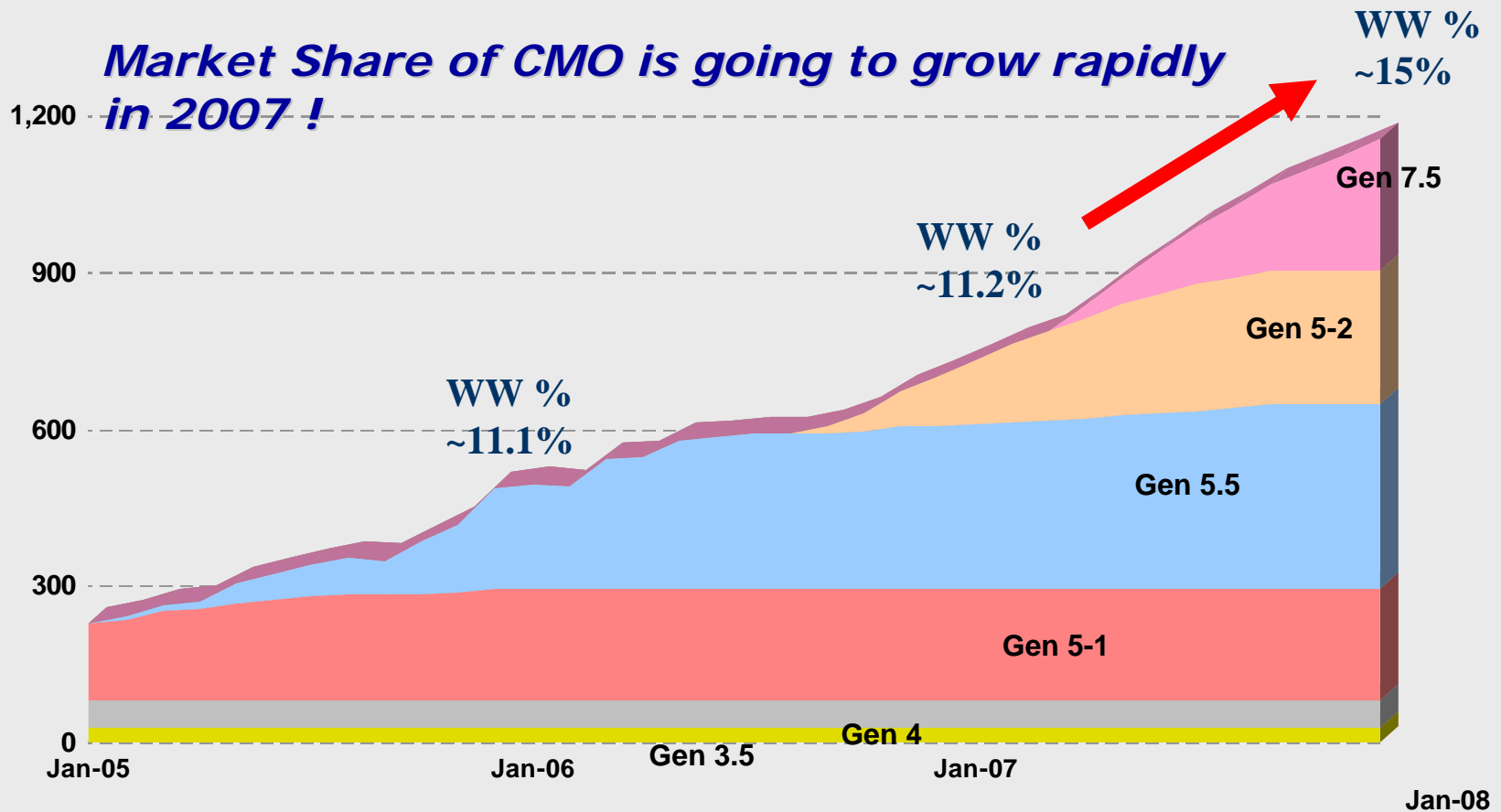


Fab 7

Capacity Plan of CMO

(K sq m / month)

***Market Share of CMO is going to grow rapidly
in 2007 !***



Sources : Company data/ Display Search

Overall Market Trend for UMPC

Current Obstacles

From Panel supplier's perspective

- ASP is still high.
- Battery life is not long enough

Market Trend

- UMPC Market Opportunity
- UMPC Market Position
- 2007 New Concept of UMPC

UMPC Price is not Attractive Enough

Best selling NBPC models on Feb'07 in US

Brand	Model	Size	CPU	HDD	ODD	ASP
Toshiba	Sat A135	15.4	Core Dual 1.6 GHz	80	DVD+/-RW	\$609.94
Apple	Macbook	13.3	Core Dual 2 GHz	80	DVD+/-RW	\$1,239.92
Toshiba	Sat A135	15.4	Core Dual 1.73 GHz	120	DVD+/-RW	\$812.68
Gateway	MT6451	15.4	Core Dual 1.6 GHz	120	DVD+/-RW	\$703.07
HP	Pavilion dv6226	15.4	Core Dual 1.6 GHz	120	DVD+/-RW	\$848.11
Compaq	Pres V6205	15.4	AMD 64 2 GHz	80	DVD+/-RW	\$599.04
Toshiba	Sat A135	15.4	Core Dual 1.6 GHz	160	DVD+/-RW	\$874.13
Compaq	Pres C 502	15.4	Cel M 1.86 GHz	80	DVD/CD-RW	\$625.31
HP	Pav dv6208	15.4	AMD 64 2 GHz	100	DVD+/-RW	\$682.31
Gateway	MX8711	17	Core Dual 1.6 GHz	100	DVD+/-RW	\$753.20

Best selling UMPC models on Feb'07 in US

Brand	Model	Size	CPU	HDD	ASP
Sony	VGNUX280P	4.5	Intel Core Solo 1.2 GHz	40	\$1,666
Sony	VGNUX380N	4.5	Intel Core Solo 1.33 GHz	40	\$1,903
Samsung	NPQ1V000	7	Intel Celeron M ULV 900MHz	40	\$929
Sony	VGNUX390N	4.5	Intel Celeron M ULV 900MHz	32	\$2,303
Samsung	NPQ1V002	7	Intel Celeron M ULV 1GHz	60	\$1,247
Sony	VGNUX180P	4.5	Intel Core Solo 1.2 GHz	30	\$888
Asustek	R2H-BH059T	7	Intel Celeron M ULV 1GHz	60	\$982
Samsung	NPQ1BV000	7	Intel Celeron M ULV 900MHz	40	\$875
Samsung	NPQ1V004	7	Via C7M 1GHz	32	\$2,019

UMPC Battery Life is not long enough

- Smaller battery for mobility, but the same NB architecture
- Current UMPC battery life is around 3~4 hours.

Source: CMO Marketing, company website

Handheld



UMPC



Notebooks



2

4

8

Hours

Mobility

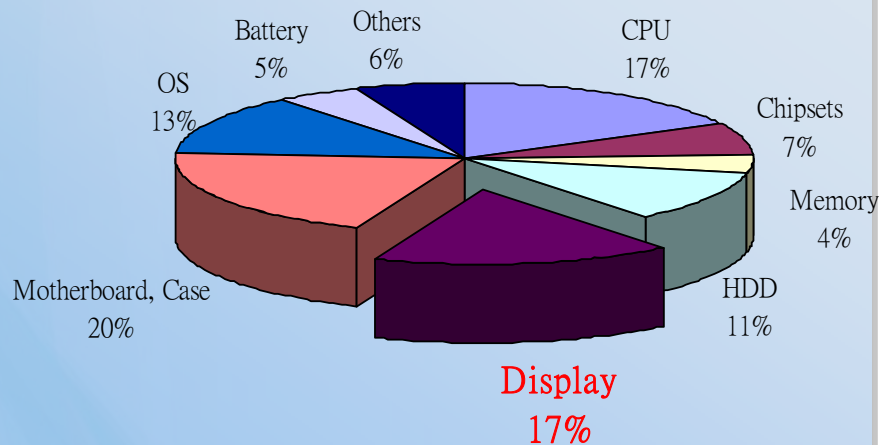
Battery Life

RE THROUGH CMO

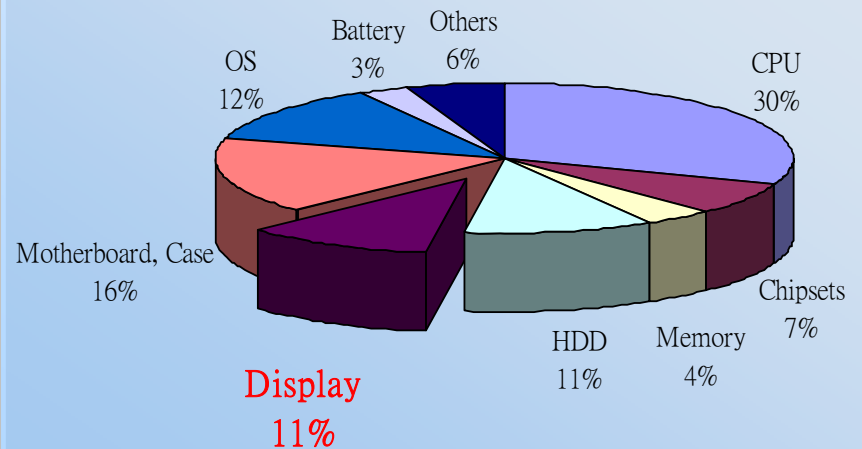
Panel Price Comparison

- 7" UMPC BOM cost is still higher than 14.1"W mainstream model because the cost of mobile components are higher.
- The display portion of 7"W BOM cost is lower than 14"W.

14.1"W NB



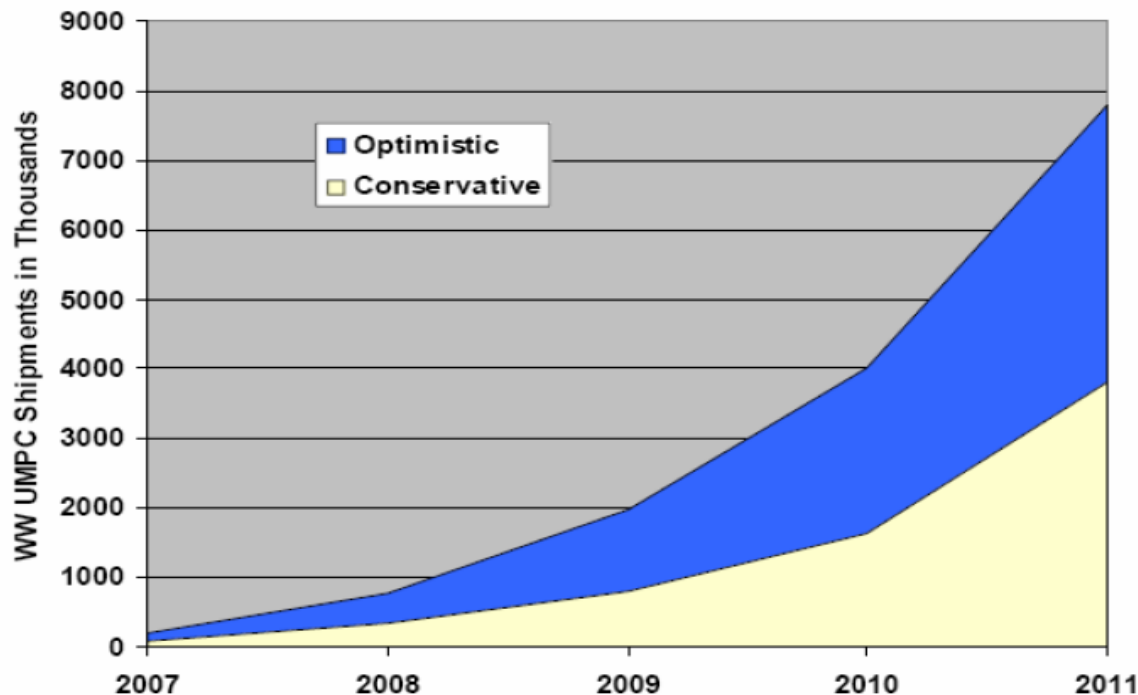
7"W UMPC



Source: CMO Marketing

UMPC Market Opportunity

- Intel's forecast is 10M by 2010
- In-Stat's optimistic version is around 4M by 2010



	2007	2008	2009	2010	2011
Optimistic	210	765	1980	4020	7810
% Growth		264.3%	158.8%	103.0%	94.3%
Conservative	100	350	810	1640	3820
% Growth		250.0%	131.4%	102.5%	132.9%

Source: In-Stat, 4/06

UMPC Market Position

On-the-Go

More Apps

Simpler UI



Performance

2007 UMPC New Device - Part 1

\$175 OLPC – 7.5"

Grayscale mode:

**Sunlight
Readable
1200x900**



Color Mode:

**Bright at night
693x520**



Source: OLPC website, company data, CMO Marketing



Nicholas Negroponte, Chairman of OLPC with ex-UN Secretary-General Kofi Annan in Tunisia for the launch of the OLPC effort

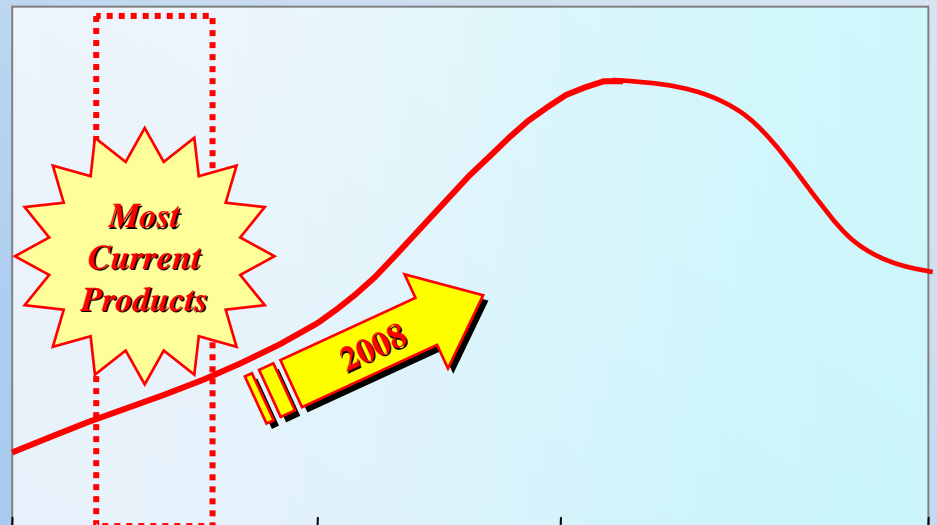
- Largest and most important educational/humanitarian effort in the world today
- An **educational effort** to ignite and leverage the unlimited potential of children across the globe
- Narrow down the digital gap between Children of poor countries and the world
- World class technology
 - + Taiwan's IT Powerhouse
 - + very large volume
 - + design only for children= a feature rich & super low cost laptop

2007 UMPC New Device -Part 2

Low Cost UMPC



UMPC \$900~\$600~\$300~
ASP 1100 900 500 \$100~300



Introduction

Growth

Maturity

CMO Product Plan & Technology

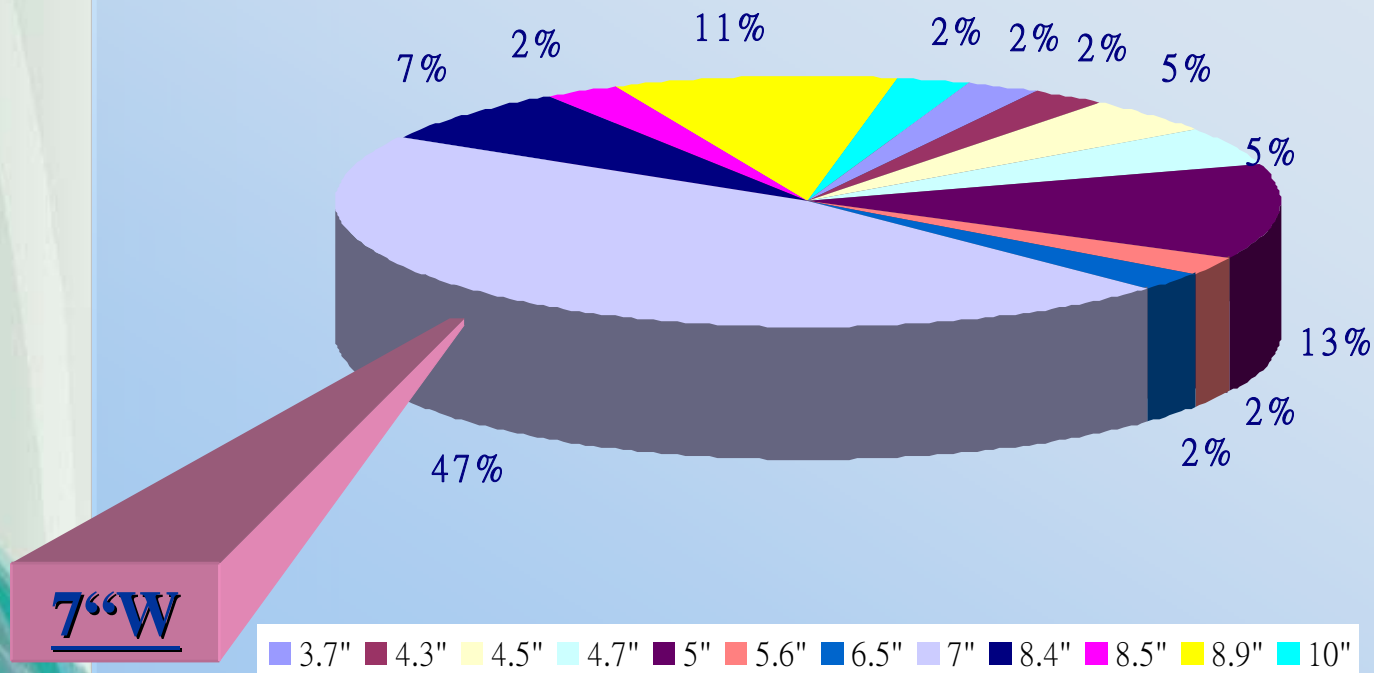
- CMO's Product Plan
 - What is best size for UMPC
 - CMO UMPC Display Product line up
- CMO's Technology Implementation
 - LED for thin & light
 - Polish & Chemical Etching
 - Power Consumption Reduction
 - Transflective for sunlight readable

How to Choose Your UMPC



7" is the Current Major Size

Diversified Size in the UMPC Market

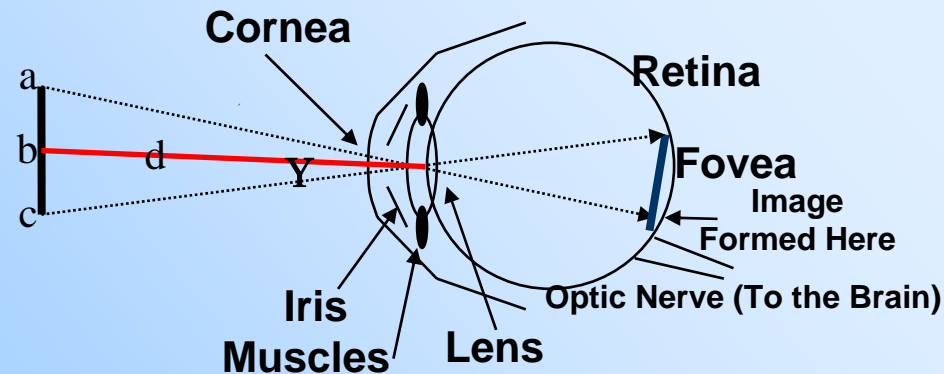


Source: CMO Marketing

Visual Acuity

Human Eyes vs Pixel Size

Human Eye



$$\frac{\theta}{2} = \arctan\left(\frac{ab}{d}\right)$$

For point acuity, the minimum visual angle is: $\theta = 1/60$ degree, thus:

$$d = 3438 \times ac \rightarrow \text{Pixel Size}$$

- Optimal Pixel size is related with 2 factors:
Size and Resolution

Optimal Pixel Size @UMPC






Optimal Pixel:

Size=500mm/3438=0.1454mm

- Optimal pixel size human eyes could recognize for UMPC should be >0.1454 mm
- Considering production, we suggest that Pixel size should be > 0.15 mm as best pixel size.

Optimal Display for UMPC

- Considering Human visual view and Production Efficiency, CMO recommends below UMPC Display for different market.
- 5.6"W(800x480) for Smaller design UMPC market
- 7"W(800x480), 8.9"W(1280x768) for general UMPC market

Optimal Pixel Size					Production Efficiency		
Size	Resolution	Active Area (mm)	Pixel Size (mm)	Suitable Size for UMPC	Size	G3.5(620x750)	G4(680x880)
4.5"W	1024x600	98.617x57.784	0.0963		4.5"W	54cuts/87.56%	72cuts/90.72%
4.5"W	800x480	98.011x58.81	0.1225		4.5"W	50cuts/81.83%	72cuts/86.75%
5.2"W	1024x600	113.96x66.77	0.1113		5.2"W	42cuts/87.78%	56cuts/90.95%
5.2"W	800x480	113.25x67.95	0.1424		5.2"W	42cuts/88.61%	56cuts/91.81%
5.6"W	1024x600	122.72x71.91	0.1318		5.6"W	36cuts/85.83%	50cuts/92.64%
5.6"W	800x480	121.97x73.18	0.1525		5.6"W	35cuts/84.25%	50cuts/93.53%
6.5"W	1024x600	142.45x83.47	0.1391		6.5"W	28cuts/87.29%	36cuts/87.21%
7"W	1024x600	153.41x89.89	0.1498		7"W	24cuts/85.61%	32cuts/88.7%
7"W	800x480	152.46x91.48	0.1906		7"W	24cuts/84.46%	32cuts/89.58%
8.9"W	1280x768	193.84x116.31	0.1514		8.9"W	15cuts/84.12%	20cuts/87.16%
10.6"W	1024x600	232.3x136.11	0.2269	Size is too large	10.6"W	12cuts/92.37%	12cuts/71.78%
10.6"W	1280x768	230.87x138.52	0.1804	Size is too large	10.6"W	12cuts/93.33%	12cuts/72.52%

The UMPC Product Line-up of CMO

Size

2007

~

2008

7" WVGA

800x480

133ppi

N070Y1 -T01

125g, 220nits

TTL, 2.6W

MP: now

N070Y1 -L01

125g, 220nits

LVDS

MP: 2007Q4

8.9" WXGA

1280x768

168ppi

N089XX

250nits

White LED

MP: TBD

5.6" WVGA

800x480

166ppi

N056XX

<100g, 250nits

White LED

MP: TBD

CMO's Technology Implementation for UMPC

Solid LED Supply Chain

- Strong relationship with JP & Taiwan LED supplier.
- LED Backlight adoption in NB panels from 2007



Design for Thinner Panel

- Glass Polish: for thinner & lighter glass
- Double COG design: for slim module design
- Thinner LGP: for thinner BLU design



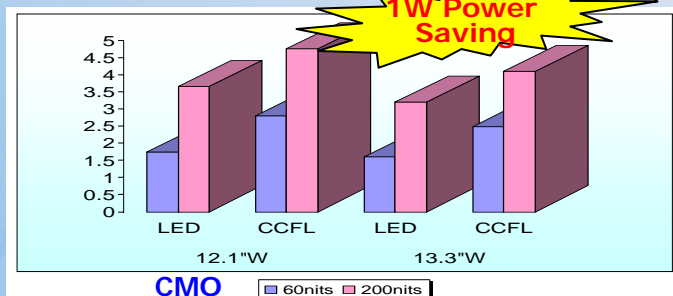
■ Mechanical Polish



- New PCBA design
- New COG design

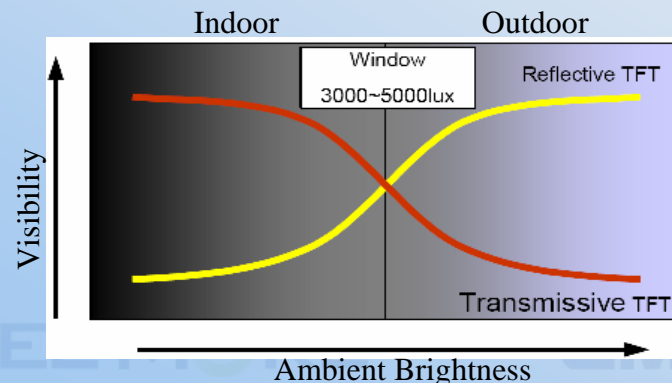
Lower Power

- Low Voltage Logic input(min:1.8V)
- Lower Voltage Liquid Crystal adoption
- White LED Backlight overall adoption(Reduce power significantly)



Transflective

- Transmissive mode for better image indoors
- Reflective mode to save power and sunlight readable outdoors



Conclusion:

- CMO is one total solution TFT-LCD display producer and supply high quality display for UMPC users.
- CMO suggests the optimal UMPC display is 5.6" W(800x480), 7" W(800x480) & 8.9" W(1280x768)
- CMO provides the essential technology features for UMPC
 - Thin & Light
 - Sunlight readable
 - Power Saving
 - Green Environment
 - Moderate Pixel Size

CMO Global Contact

Headquarters

No. 3, Sec. 1, Huanshi Rd., Southern Taiwan Science Park,
Sinshih Township, Tainan County, 74147 Taiwan
Tel: +886 6 505 1888 FAX: +886 6 505 1800

CMO Taipei Sales Office

6F, No. 161, Sec. 4th, Nan-King E. Rd. Taipei, 105, Taiwan
TEL: +886 2 25457290 FAX: +886 2 25457868

CMO Japan Co. Ltd.

Nansel-Yaesu Bldg. 4F, 2-2-10 Yaesu, Chuo-ku,
Tokyo 104-0028, Japan
TEL: +81 3 52557755 FAX: +81 3 52557756

CMO Europe B.V.

Jupiterstraat 106,
2132HE Hoofddorp, The Netherlands
TEL: +31 235671050 FAX: +31 235671067

CMO (Singapore) Pte Ltd.

25 International Business Park,
#04-20/21 German Centre
Singapore 609916
TEL: +65 6560 7528 (2 lines) FAX: +65 6560 1708

Chi Mei Optoelectronics USA, Inc.

101 Metro Drive Suite 510,
San Jose, CA 95110, United States
TEL: +1 408 5738438 (8IDT) FAX: +1 408 5739438 (9IDT)

Chi Mei Optoelectronics UK Ltd.

Langstone Technology Park,
Langstone Road, Havant, Hampshire,
PO9 1SA, United Kingdom
TEL: +44 (0)23 9244 5270 FAX: +44 (0)23 9244 5280

Chi Mei Optoelectronics Germany GmbH

Hanns-Martin-Schleyer Strasse 9b-9c
47877 Willich-Munchhelde
Germany
TEL: +49(0)2154-81478-0 FAX: +49(0)2154-81478-40

THANK YOU

MOBILITY